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TOWARD MORE INNOVATIVE PROGRAM MANAGEMENT

DR. GEORGE H. "TONY" PERINO

The purpose of this paper is to provide a portion of the results of my ongoing research into the science and psychology of innovation. The research project reported herein focuses on the linkage between an individual's psychological preferences for data gathering and decision-making and the individual's preference for creativity in generating alternative solutions to problems.

The research was conducted between March 2002 and January 2004. Participants were highly motivated and experienced acquisition practitioners attending a ten-week, executive-level course designed to sharpen their critical and creative thinking skills as program management team leaders. Attendees represented all military services and key acquisition support agencies as well as major industrial suppliers of Department of Defense (DoD) weapons and information technology systems. A minimum of four years' hands-on experience in, or in direct support of, a program management office and an undergraduate degree were mandatory prerequisites. The 171 participants in this study averaged over 20 years of military or civil service. Most had at least one master's degree, 35 had two, and seven had doctorates. These individuals represented the *crème* of the acquisition workforce in the DoD.

METHODOLOGY

Instrumentation used to identify participant psychological preferences for data gathering, decision-making, and creative problem-solving included the Myers-Briggs Type Indicator® Form Q and FourSight™. Both instruments were administered online early in the course and subsequently debriefed in person by qualified instructors as part of the scheduled curriculum. Participant MBTI typology and FourSight problem-solving

preferences became the basis for classroom discussion during several case studies involving system acquisition problems for which there was no right answer. The intent was to alert participants to their managerial strengths and blind spots when dealing with programmatic dilemmas on the job.

INSTRUMENTATION

The Myers-Briggs Type Indicator is one of the most common psychological assessment tools in world-wide use. (McCaulley, 1990) It draws on psychologist Carl Jung's theory of personality types and addresses how people set priorities, acquire information, relate to others and make decisions. Jung claimed that humans are guided by their data gathering and decision-making preferences when solving problems. The preference for types of data is referred to as the perceiving function. Individuals have a preference for sensory input or intuitive input. They are most comfortable with facts or with ideas. Thus, their identification of the problem to be solved will likely be framed from their preferred viewpoint. The MBTI instrument distinguishes between this preference for sensing (S) or intuitive (N) data gathering. Deciding what to do with the information is referred to as the judging function. According to Jung, individuals prefer to make that choice based on analysis and logic or personal subjective values. The MBTI instrument distinguishes between these preferences as thinking (T) and feeling (F). The MBTI instrument also extends Jung's theory by measuring a person's preference for extraversion (E) or introversion (I) and goes beyond Jung to help identify which function—perceiving (P) or judging (J)—is dominant. Taken as a whole, the Myers-Briggs typology identifies sixteen different personality types. There is a significant volume of research available on MBTI theory and its practical use in virtually every facet of life.

Individuals have a preference for either sensory input or intuitive input.

The FourSight is a newer, less well-known, but no less useful instrument for assessing an individual's preference for different aspects of the problem-solving process. The instrument—previously called the Buffalo Creative Problem Solving Inventory—is the result of research conducted during the 1990s by Gerard J. Puccio, Ph.D., a professor at the International Center for Studies in Creativity at Buffalo State University. The instrument helps identify a person's preference for behavior as a clarifier, ideator, developer, or implementer. Clarifiers want a clear understanding of the issue and prefer a methodical approach to solving problems. Ideators enjoy toying with ideas and possibilities. They take an intuitive approach to innovation. Developers enjoy analyzing potential solutions and

planning the steps to implement an idea. Implementers like to see things happen. They often *just do it* (Puccio, 2002).

Both instruments measure preferences. Neither measures capabilities. Each individual can and does use each facet of their personality, but they may tend to overuse the problem-solving style that is most comfortable, rather than the style which may be more appropriate given the problem at hand.

If thinking outside the box involves creativity, what does prior MBTI research tell us about creativity and the perceiving and judging functions?

PRIOR RESEARCH

If *thinking outside the box* involves creativity, what does prior MBTI research tell us about creativity and the perceiving and judging functions? Walk (1996) reviewed a large amount of research on type and management. Her conclusion was that intuition (N) and perceiving (P) appear to be positively associated with creativity and managing change. She found an increasing selection for intuition as one moves up through the organizational ranks and at the executive level. According to MBTI theory, the combination of N and P is more open to new ideas than the combination of S and J. Of the 16 types, four share a preference for NP and four a preference for SJ.¹ Research into the typology of 4,617 students attending program management courses at the Defense Systems Management College(DSMC) between 1985 and 1994 found that attendees with a preference for NP comprised only 15.7 percent of the student population whereas attendees with a preference for SJ totaled 50.4 percent (Chapla et al., 1994). Those students represented mid-career acquisition workforce membership. The 171 participants in the instant research reported a slightly higher proportion of preference for NP (19.3 percent) and a slightly lower proportion for SJ (44.4 percent), thus reflecting the pattern suggested by Walk's findings.

Puccio (2002) found a strong positive relationship between psychological preferences for ideation and intuition (N) during his development and refinement of the FourSight instrument. He found that the relationship between ideation and perceiving (P) was also positively correlated, but not as strongly so. He did find a strong negative correlation between the preference for clarification and perceiving (P) as well as development and perceiving (P). Both clarifiers and developers have a focused quality about them and seem to relate more closely to judging (J) types who enjoy being decisive, establishing closure, having clear limits and plan in advance. Such actions can be quite problematic to perceiving (P) types. These same relationships were found to hold in the study results reported herein.

Gough (1981) derived a Creativity Index based on research into the relationship between Myers-Briggs typology and creativity at the Institute for Personality Assessment and Research

(IPAR). Gough’s research suggested that creative individuals tend to be more intuitive (N) than sensory (S) and more perceiving (P) than judging (J), but added that creativity was enhanced by extroversion (E) rather than introversion (I) and thinking (T) rather than feeling (F). The index, based on continuous scores from MBTI Form G, gives greatest weight to the perceiving function.² Gough estimated that individuals with Creativity Index scores under 250 are less likely to demonstrate creative behavior and those with scores above 350 are more likely to demonstrate creative behavior. An average Creativity Index using the MBTI data bank of 50,000 women and 39,000 men was calculated at 235.5 (Myers and McCaulley, 1992). The average Creativity Index among our 171 study participants was 288.7. In keeping with Gough’s research the lowest average scores were found among SJs and the highest scores among NPs.

A breakout of MBTI typology of the 171 study participants is shown in Table 1. Correlations between FourSight scores and MBTI dimensions are shown in Table 2. Average Creativity Index scores by MBTI typology for our 171 participants are shown in Table 3.

MBTI TYPOLOGY AND PROGRAM MANAGEMENT

As shown in Table 1, four MBTI types (ISTJ, ESTJ, INTJ, ENTJ) comprise well over half (60.2 percent) of the 171 participants in our study. This is not surprising since these four types tend to dominate organizational leadership positions (Kroeger,

TABLE 1. MYERS-BRIGGS TYPE INDICATOR BREAKOUT

| Participant Myers–Briggs Typology | | | |
|-----------------------------------|-------------------------|-------------------------|---------------------------|
| N = 171 | | | |
| ISTJ n = 37 (21.6%) | ISFJ n = 1 (0.6%) | INFJ n = 3 (1.8%) | INTJ n = 14 (8.2%) |
| ISTP n = 16 (9.4%) | ISFP n = 0 (0.0%) | INFP n = 3 (1.8%) | INTP n = 12 (7.0%) |
| ESTP n = 9 (5.3%) | ESFP n = 1 (0.6%) | ENFP n = 6 (3.5%) | ENTP n = 12 (7.0%) |
| ESTJ n = 34 (19.9%) | ESFJ n = 3 (1.8%) | ENFJ n = 2 (1.2%) | ENTJ n = 18 (10.5%) |

TABLE 2. MYERS-BRIGGS TYPE INDICATOR CORRELATIONS

| Correlations between MBTI and FourSight Preferences | | | | |
|--|------------|------------|-----------|-------------|
| | Clarifier | Ideator | Developer | Implementer |
| E - I | -.12907 | -.24461*** | -.15098* | -.27667*** |
| S - N | -.08653 | +.45926*** | +.07804 | -.20090** |
| T - F | -.01908 | +.09011 | -.05302 | +.04194 |
| J - P | -.26851*** | +.19200* | -.23235** | -.21824** |

Note: * = statistically significant at the .05 level of probability
 ** = statistically significant at the .01 level of probability
 *** = statistically significant at the .001 level of probability

Theusen, and Rutledge, 2002.) While these four program management types share a preference for decision-making based on impersonal logic, their leadership styles do differ (Demarest, 1996). The ISTJ tends to hold that authority derives from position and prefers traditional, hierarchical organizations. The ESTJ, described as the natural manager, also tends toward traditional leadership, respecting hierarchy. Both are willing to take charge, but reluctant to make unnecessary changes in established procedure. Conversely, the INTJ tends to believe that authority derives from competence, not position, and pursues personal and organizational improvement. The ENTJ has been described as the natural leader with a driving vision of the organization's future. All tend to be impatient and may overlook the human aspect of management and leadership.

MBTI TYPOLOGY AND CREATIVE PROBLEM SOLVING

The coefficients displayed in Table 2 indicate a statistically significant correlation between the preferences for extraversion (E) and intuition (N) and the preference for exploring new ways to solve problems (Ideation). We also found statistically significant correlation between the preference for perceiving (P) and Ideation. Preferences for extraversion (E), sensing (S) and judging (J) were highly correlated with the preference for Implementation...the *just do it* approach to problem-solving. Since most DoD PMs spend at least a portion of their careers in operational assignments, this latter finding suggests that innovative program management requires a significantly different approach to education than the training typically employed in developing successful combat leaders. There is a difference between making a decision and solving a problem. As a young army officer, I was inculcated with the mantra that *a bad decision is better than no decision!* That approach made sense in an environment

**TABLE 3. MYERS-BRIGGS TYPE INDICATOR
AVERAGE CREATIVITY INDEX SCORES**

| Average Creativity Scores | | | |
|------------------------------|-----------------------------|-----------------------------|------------------------------|
| ISTJ n = 37 ci = 162.4 | ISFJ n = 1 ci = 260.8 | INFJ n = 3 ci = 352.4 | INTJ n = 14 ci = 315.7 |
| ISTP n = 16 ci = 279.8 | ISFP n = 0 ci = n/a | INFP n = 3 ci = 395.3 | INTP n = 12 ci = 403.3 |
| ESTP n = 9 ci = 300.5 | ESFP n = 1 ci = 245.8 | ENFP n = 6 ci = 459.1 | ENTP n = 12 ci = 474.0 |
| ESTJ n = 34 ci = 213.4 | ESFJ n = 3 ci = 297.6 | ENFJ n = 2 ci = 404.2 | ENTJ n = 18 ci = 376.0 |

where errors in tactical judgment are readily observable and often correctible. That mantra has always resonated with the students I have encountered here at DSMC. Creative program management requires at least a modicum of strategic thinking, since the results of decisions made today may not become known for a considerable amount of time. The learned behavior of rapid decision-making that enables success in an operational environment may well be the cause for failure in the system acquisition environment.

As suggested by the creativity indices shown in Table 3, ISTJ and ESTJ program managers would be less likely to pursue creative approaches to problem solving than INTJs or ENTJs. The four MBTI types with the lowest creativity indices (ISTJ, ESTJ, ISFJ, ESFP) account for over 40 percent of our study participants whereas the four MBTI types with the highest creativity indices (INFP, INTP, ENFP, ENTP) comprise less than 20 percent. Keep in mind that the participants in this study are the future managers of defense systems most subject to close scrutiny at the senior levels of the Federal government. So it should not come as a surprise that senior civilian leadership in charge of the AT&L workforce might desire more *out of the box thinking* from the program managers they encounter.

IMPLICATIONS

Given that many of the DoD program managers may be psychologically unprepared to think outside the box, what might be done to develop innovative program management within the DoD systems acquisition workforce?

Reducing regulatory constraint on program management initiative has been a step in the right direction for the NP program manager, but less so for the SJ program manager who feels most secure within well-defined organizational structures and clearly articulated procedures. Regulations must encourage and even reward the personal risks that are taken when pursuing creative problem-solving to motivate the majority of our acquisition workforce personnel. Demonstrating how program success resulted from creative initiative is also needed to provide SJ program managers with validated models to emulate. The Integrated Product Team initiative of the 1990s provides an organizational structure for creative problem - solving if team membership embraces all facets of the creative problem solving process—clarification, ideation, development and implementation. Thus, training IPT members in the creative problem-solving process and educating them on their psychological preferences would be very worthwhile.

Regulations must encourage and even reward the personal risks that are taken when pursuing creative problem-solving to motivate the majority of our acquisition workforce personnel.

While these actions would prove most beneficial for SJ program managers, they would also enhance the willingness of NT and NP program managers to publicly pursue their inherent preference for innovation. It is important to recognize that validating the creative problem-solving process as an appropriate form of program management should begin early in acquisition workforce development. If senior DoD leadership truly wants program managers to think outside the box, they must mandate that expectation in the design of acquisition workforce education and training curricula.

ENDNOTES

1. INFP, INTP, ENFP, ENTP and ISTJ, ISFJ, ESTJ, ESFJ.
2. MBTI Creativity Index = $3SN + JP - EI - .5TF$.



Dr. George H. (Tony) Perino holds a Ph.D. in public policy (Science and Technology) from George Mason University; a master's degree in history from Stetson University; a master's of business administration in finance and international business management from Loyola University of Chicago; and, a bachelor's degree in accounting from Stetson University. His principal research interests lie in the science and psychology of innovation. Perino taught at Defense Systems Management College (DSMC) from 1978 to 1982 and at Defense Acquisition University (DAU) from 1989 to 2004.

(E-mail address: perinot@erols.com)

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